MATURE FIELDS

CASE STUDY

Halliburton Delivers Subsea P&A Project in Mature Field

INTEGRATED SERVICES TEAM DELIVERS MULTI-WELL P&A PROJECT 22 DAYS AHEAD OF SCHEDULE AND USD 4 MILLION UNDER BUDGET

NORTH SEA

CHALLENGES

- Execute safe and efficient P&A operations for multiple subsea wells in the North Sea
- Reduce P&A costs through POB optimization without impacting HSE or operational performance
- Reduce risks of conducting subsea well P&A operations

SOLUTIONS

- Provide Halliburton services for cementing, fluids, slickline, e-line, tubing-conveyed perforation (TCP), and completions
- Employ a Halliburton Integrated Services coordinator to drive efficiencies and planning
- Implement efficient Halliburton services, technologies, and methodologies
- Assign multi-skilled Halliburton crews to the project

RESULTS

- Successfully completed the project, with zero HSE incidents
- Completed P&A operations 22 days ahead of plan for multiple subsea wells, and with minimal NPT
- Minimized POB requirements and optimized efficiencies through the use of multi-skilled Halliburton crews
- Delivered project cost savings of approximately USD 4 million

OVERVIEW

Halliburton was awarded a contract from a well management company to provide plug and abandonment (P&A) services for seven subsea wells in a mature field located in the North Sea. The project was estimated to take around six months to complete.

CHALLENGES

The risks associated with conducting subsea well P&A operations are significantly increased from platform P&A work scopes, due to various reasons:

- Inability to easily move between well bays, should there be unexpected downhole conditions
- Difficulties in conducting a time-saving, platform-phased approach:
  Phase 1 – Plug and lubricate
  Phase 2 – De-complete and place barriers
  Phase 3 – Remove conductor
- Problematic subsea wellhead access and maintenance because of aged equipment with structural concerns
- Contingency equipment requirements for possible downhole scenarios

These challenges had the potential to add significant cost to the project's economics; therefore, the collective project teams carefully considered the commercial risks that the project posed, specifically related to costs.

The sensitive nature of the worksite, along with the potential for health, safety, or environmental (HSE) incidents on offshore installations, drove the implementation of scope-specific HSE key performance indicators (KPIs).

The well portfolio varied in complexity, from full well abandonment to re-entry of already abandoned wells, so it was imperative to have correct planning and equipment selection in order to cover the provision of all existing and possible well scenarios. The application of innovative technology and the implementation of multi-skilled personnel would impact the project delivery from commercial and technical perspectives.

SOLUTION

Halliburton was contracted to provide services for cementing, fluids, slickline, e-line, tubing-conveyed perforation (TCP), and completions.

A Halliburton Integrated Services coordinator was assigned to the project to ensure project efficiencies through effective leveraging of Halliburton services, technologies, and methodologies.

To achieve optimum efficiencies, the Halliburton team:

- Reduced personnel on board (POB) requirements and costs by utilizing multi-skilled Halliburton crews, including:
  - An integrated cased-hole wireline crew that was cross-trained to run completion tools
  - A cementing crew that was cross-trained to run service tools
- Utilized Halliburton Remote Open Close Technology (ROCT) to reduce wireline runs
- Provided a cement plug checklist to eliminate the requirement of tagging cased-hole cement plugs
- Used an RTTS® packer as a well barrier in order to remove a Christmas tree while waiting on cement
- Verified, using a fluids test kit, that fluids were within allowable specifications for offshore discharge

The Halliburton team captured lessons learned, identified opportunities for improvement, and leveraged experience from previous projects to help foster an ethos on continuous improvement.

RESULTS

The project was completed safely and efficiently – well ahead of schedule and under budget, with zero HSE incidents.

With Halliburton serving as the main contractor, the resulting efficiencies enabled the project to be delivered 22 days ahead of schedule, providing cost savings of approximately USD 4 million.

The Halliburton team's ability to work closely with the client to provide scope-specific solutions and to implement cost-saving and time-saving technologies were major contributing factors to the project's overall success.

Halliburton operated at a 98.59 percent efficiency rate, with only 1.41 percent of recorded non-productive time (NPT) over the project's duration. Additionally, the Halliburton team's operating performance provided savings of 147 hours on overall planned project timings.

This positive project delivery has allowed Halliburton to gain the first integrated well abandonment project for subsea well stock in the North Sea, while adding to our already robust P&A track record.

Sales of Halliburton products and services will be in accord solely with the terms and conditions contained in the contract between Halliburton and the customer that is applicable to the sale.

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